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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/572,725	03/21/2006	Seon Ho Han	CU-4700 WWP	6890

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LADAS & PARRY LLP
224 SOUTH MICHIGAN AVENUE
SUITE 1600
CHICAGO, IL 60604

EXAMINER	
HSIEH, PING Y	

ART UNIT	PAPER NUMBER
2618	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/572,725	HAN ET AL.	
	Examiner	Art Unit	
	Ping Y. Hsieh	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 March 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/31/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al. (U.S. PATENT NO. 7,089,032) in view of Oono et al. (U.S. PATENT NO. 7,085,587).

-Regarding claims 1, 3, 8 and 13, Hongo et al. disclose an RF front-end transceiver **(as disclosed in fig. 2)** comprising: an oscillator for outputting a resonant frequency signal whose frequency is controlled by a frequency control signal **(frequency synthesizer part 140 and 141 as disclosed in fig. 2 and further disclosed in col. 7 lines 6-10)**; a receive amplifier for amplifying and outputting a receive RF signal **(amplifier 122 as disclosed in fig. 2 and further disclosed in col. 7 lines 59-63)**; a receive mixer for mixing the receive RF signal amplified and the resonant frequency signal **(mixer 123 as disclosed in fig. 2 and further disclosed in col. 7 lines 59-63)**; a transmit mixer for mixing a transmit base band signal and the resonant frequency signal to convert the transmit base band signal into a transmit RF signal **(mixer 112 as disclosed in fig. 2 and further disclosed in col. 7 lines 3-6)**; and a transmit amplifier for amplifying and outputting the transmit RF signal **(amplifier 130 as disclosed in**

fig. 2 and further disclosed in col. 7 lines 3-6), wherein a resonant frequency of at least one of the receive amplifier, the receive mixer, the transmit mixer and the transmit amplifier is controlled by the frequency control signal **(frequency synthesizer part 140 and 141 generates a number of frequencies by their switching to effectively share frequency channels assigned to a system as disclosed in fig. 2 and further disclosed in col. 7 lines 6-9)**. However, Hongo et al. fail to disclose the receive mixer converts the receive RF signal into a receive base band signal.

Oono et al. disclose a direct conversion system for directly down-converting a received signal to a baseband signal (I/Q) as disclosed in col. 1 lines 39-53.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the mixer as disclosed by Hongo et al. to be able to direct convert the received signal to a baseband signal as disclosed by Oono et al. One is motivated as such in order to reduce the circuit size.

-Regarding claims 2, 4, 9 and 14, the combination further discloses the frequency control signal is provided from a frequency synthesizer **(Hongo et al., frequency synthesizer part 140 and 141 as disclosed in fig. 2 and further disclosed in col. 7 lines 6-10)**.

-Regarding claims 5, 10, 15 and 17, the combination further discloses the frequency control signal includes an analog frequency control signal and a digital frequency control signal **(Hongo et al., as disclosed in fig. 2)**.

-Regarding claims 6, 11, the combination further discloses the frequency of the resonant frequency signal is controlled by an analog frequency control signal and a digital frequency control signal, and wherein, a resonant frequency of the receive amplifier and the receive mixer is controlled by the frequency control signal **(Hongo et al., frequency synthesizer part 140 and 141 as disclosed in fig. 2 and further disclosed in col. 7 lines 6-10)**.

-Regarding claims 7, 12 and 18, the combination further discloses the receive amplifier has a net input resistance controlled by the digital frequency control signal **(Oono et al., the second stage amplifier PGA2 and the third stage PGA3 are respectively configured so as to be capable of adjusting input offsets with resistors attached to their input terminals as disclosed in col. 9 lines 28-47)**.

3. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al. (U.S. PATENT NO. 7,089,032) in view of Oono et al. (U.S. PATENT NO. 7,085,587) and further in view of Van Rumpt (U.S. PATENT NO. 7,299,018).

-Regarding claim 16, the combination of Hongo et al. and Oono et al. discloses all the limitation as claimed in claim 13. However, the combination fails to specifically disclose a LC tank including a capacitor controlled by the digital frequency control signal, a capacitor controlled by the analog frequency control signal and a fixed capacitor.

Van Rumpt discloses a LC tank including a capacitor controlled by the digital frequency control signal, a capacitor controlled by the analog frequency

control signal and a fixed capacitor **(as disclosed in fig. 1B and further disclosed in col. 5 line 31-col. 6 line 38)**.

Therefore, it would have been obvious to one of ordinary skills in the art at the time of invention to modify the oscillator as disclosed by Hongo et al. and Oono et al. to be the variable capacitance bank as disclosed by Van Rumpt. One is motivated as such in order to lower the bias voltage and to avoid the need for DC/DC converters.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Zipper (U.S. PATENT NO. 7,245,897).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ping Y. Hsieh whose telephone number is 571-270-3011. The examiner can normally be reached on Monday-Thursday (alternate Fridays) 8:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lana Le can be reached on 571-272-7891. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

2-03-08

PH

LANA LE
PRIMARY EXAMINER